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CASE STUDY REGARDING DETERMINATION AND USE OF ASTRO-GEODETTIC DEVIATIONS OF THE VERTICAL IN ROMANIA

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Abstract

This paper presents first results of a study, on the determination and use of the deviations of the vertical for obtaining an accurate geoid in Romania, as a future goal. For the beginning, the study occurred on a limited area of about 22000 km² in the south part of Romania, including the capital Bucharest. We used data from three different sources: historical astro-geodetic deviations of the vertical (before 1990), deviations derived from two global geoid models (Gravity field and steady-state Ocean Circulation Explorer – GOCE and Earth Gravitational Model 2008 – EGM2008) and present astro-geodetic deviations. Present deviations were obtained using three different instruments, one astronomical and two geodetic. Inside of the study we perfect a new procedure for the determination of the astro-geodetic vertical deviation, adapted for modern geodetic instruments. The results and comparisons made offers insight into the possibilities of obtaining and using vertical deviations, as well as an estimate of their quality in terms of precision and accuracy.

Key words: astronomical geodesy, deviation of the vertical, geoid

Received: August, 2015; Revised final: March, 2016; Accepted: April, 2016

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